1159-111 Hypertension Induced Left Ventricular Hypertrophy in Females is Associated With Reduced Tolerance to Ischemia and Reperfusion

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Background: Female gender has been associated with worse outcome after myocardial infarction and more pronounced left ventricular hypertrophy (LVH) secondary to pressure overload. Therefore we tested whether (1) LVH secondary to hypertension (HTN) is more pronounced and (2) susceptibility to ischemia and reperfusion (ISCH + R) injury is increased in female (F) compared to male (M) rats with and without LVH.

Methods: F and M salt-resistant (DR) and salt-sensitive (DS) Dahl rats (n = 7 per group) were fed high salt diet from age 9–13 weeks. Then hearts underwent 30 min of ISCH (15% of baseline coronary flow) at 7 Hz followed by 30 min of R on an isovolumic, red cell perfused Langendorff (LD) model.

Results: High salt diet resulted in a similar extend of HTN in F and M DS (184 ± 4 vs 195 ± 6 mmHg; NS) whereas F and M DR did not develop HTN. Non-hypertensive FDR had a higher LV/body weight (BW) ratio than MDR (3.3 ± 0.2 vs 2.9 ± 0.1; p < 0.01). HTN resulted in a similar increase in LV/BW ratio in F and M leading to a higher degree of LVH in FDS vs MDS (4.2 ± 0.2 vs 3.7 ± 0.1; p < 0.01). On the LD model at identical coronary flow/gLV, absolute developed pressure (LVdevP) was similar in F and M LVH and non-LVH hearts. However, LVdevP/gLV was significantly higher in FDS vs MDS (190 ± 13 vs 147 ± 9 mmHg/g; p < 0.003) and FDR vs MDR (182 ± 13 vs 145 ± 15 mmHg/g; p < 0.003), indicating greater contractility in F vs M both with and without LVH. During ISCH LVdevP decreased to 22–24% in all groups (NS). % recovery of LVdevP was better in LVH than non-LVH hearts and in M than in F (84 + 4 vs 76 ± 3%, MDS vs FDS and 72 ± 5 vs 64 + 5%, MDR vs FDR; p < 0.001). Similarly, diastolic dysfunction (LVEDP/g) was worse in F than in M during ISCH (43 ± 5 vs 28 ± 2, FDS vs MDS and 44 ± 5 vs 30 ± 4 mmHg/g, FDR vs MDR; p < 0.001) and R (19 ± 4 vs 10 + 1, FDS vs MDS and 21 ± 2 vs 11 ± 3 mmHg/g, FDR vs MDR; p < 0.001).

Conclusion: HTN induced LVH was more pronounced in F than M rats. Independent of LVH, F gender was associated with decreased tolerance to ISCH + R injury, supporting the notion that gender influences outcome in acute ischemic syndromes.

1159-112 An Experimental Model of Myocardial Hibernation

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Background: Hibernating myocardium (HM) refers to chronically ischemic, viable myocardium. This may be diagnosed by dobutamine stress echocardiography (DSE) and positron emission tomography (PET). To date, a reliable model of HM does not exist.

Methods: Nine adult mini-swine were randomized into experimental (exp) (n = 6) and control groups (n = 3). A hydraulic occluder and electromagnetic flow probe were placed around the proximal left circumflex coronary artery. On postoperative day (pod) 3, the exp group underwent an 85–90% reduction in coronary blood flow (20 to 1.5 ml/min). PET and DSE were performed on pod 6 and 33 to detect HM. Percent infarct was assessed with triphenyl-tetrazolumchloride (TTC).

Results: Mean myocardial blood flow (ml/gm/min) by PET was significantly reduced in the lateral and posterior walls (middle and base regions), as well the inferior wall (base region) of the heart as compared to anterior control regions (p < 0.05). Mean glucose uptake (umol/gm/min) was significantly increased in the middle and base regions of the lateral, posterior, and inferior walls of the heart (p < 0.05). This pattern is consistent with HM. Wall motion scores by DSE did not reach statistical significance. TTC staining demonstrated a mean of only 8 ± 9% infarction at the endocardial surface.

Conclusions: HM can be reproduced in an animal model. This should prove instrumental in furthering the study this poorly understood entity.

1160 Nuclear Cardiology: Risk Stratification

Wednesday, April 1, 1998, 9:00 a.m.–11:00 a.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 10:00 a.m.–11:00 a.m.

1160-125 Predictors of Outcome of Medically Treated Patients With Left Main/3-Vessel Disease by Coronary Angiography

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Background: This study examined the prognostic value of SPECT in 396 angiographic high risk patients (pts) (left main/3-vessel disease).

Methods: All pts had stress SPECT perfusion imaging; none had prior myocardial infarction (MI) or revascularization (revasc). The SPECT images were scored as high, medium, and low risk based on size of perfusion abnormality, multivessel abnormality, left ventricular dilation and lung uptake.

Results: Within 3 months of SPECT, 210 pts (46%) underwent revasc and the remaining 186 pts (64 ± 9 yrs.) were treated medically. Of these pts, during a mean follow-up of 36 ± 26 months, there were 52 hard events (cardiac death or nonfatal MI). The pts with events had lower exercise duration (6.3 ± 2.3 min vs 7.1 ± 2.7 min, P = 0.05); lower left ventricular ejection fraction (50% ± 19 vs 59% ± 15, P = 0.05) and more severe left anterior descending artery disease (33% vs 20%, P = 0.04 than pts without events. The SPECT score was higher (more severely abnormal) in pts with events than without events (4.4 ± 1.6 vs 3.7 ± 1.8, P = 0.01). Multivariable Cox survival analysis showed that the SPECT score was the only independent predictor of outcome. The event rate was 32% in the high risk group (46% of pts), 23% in the medium risk group (42% of the pts) and 19% in the low risk group (RR = 4.6, 95% CI = 1.2–5.8, P = 0.01).

Conclusion: Even in angiographic high risk pts, stress SPECT perfusion imaging is useful in predicting outcome, with 4.6 fold differences in event-free survival between low and high risk groups.

1160-126 Prognostic Value of a Normal Myocardial Perfusion SPECT in Patients Undergoing Coronary Angiography

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Background: Patients with normal myocardial perfusion SPECT scans are at low risk for future cardiac event and usually do not undergo angiography.

Methods: We studied 132 consecutive pts (mean age 66 ± 11, 54% females) who had normal dual-isotope Tc-99m sestamibi myocardial perfusion SPECT (exercise or adenosine) and had coronary angiography 6 months before or after nuclear test and had no history of myocardial infarction (MI) or revascularization. Pts were followed up for a minimum of 1 year and a mean of 22.5 ± 6.4 months. SPECT was interpreted using a 20-segment and 5-point scoring system (0 = normal, 4 = absent uptake). Sum of the stress scores of 20 segments (SSS) was calculated and SSS < 4 was defined as normal.

Results: Abnormal angiograms (≥50% stenosis) were found in 59 pts (45%), including 7 left main (LM), 4 triple, 17 double, and 31 single vessel disease. During follow-up, hard events occurred in 3 (2.3%, 1.2%/year) pts (2 cardiac death, 1 MI), all with double vessel disease. There were no hard events in pts with triple vessel and LM disease. Soft events occurred in 17 (12.9%, 6.9%/year) pts (7 PTCA, 10 CABG).

Conclusion: In patients undergoing angiography and SPECT, a normal stress Tc-99m sestamibi myocardial perfusion SPECT is associated with a good prognosis which may complement the angiographic assessment of risk.

1160-127 Adherence to Published AHA/ACC Guidelines for Preoperative Evaluation in Vascular Surgery

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Background: To evaluate practice patterns of physicians involved in preoperative evaluation at a New England hospital we investigated 101 consecutives patients (pts) undergoing intermediate (carotid endarterectomy 44, femoropopliteal bypass 19) and high risk (aortofemoral bypass 2, abdominal aortic aneurysm resection 36) vascular surgery. These pts were evaluated preoperatively by anesthesia 66 (65%), cardiology 22 (22%) and internal medicine 13. The mean age of this cohort was 71 ± 8 (SD) yrs, 66 (65%) were male, 61 (60%) had 3 or more cardiac risk factors (CHF), 29 (30%) had history of a previous myocardial infarction (MI), 25 (25%) had angina and 10 (10%) had CABG.

Results: There were no difference in CRF's among the pts evaluated preoperatively by the different specialty groups. Preoperative evaluation ac-